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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/773,546	02/02/2001	Yoshiki Kuhara	33035 M 059	8047

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EXAMINER

PHAN, HANH

ART UNIT PAPER NUMBER

2633

DATE MAILED: 04/07/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/773,546

Applicant(s)

KUHARA ET AL.

Examiner

Hanh Phan

Art Unit

2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 February 2001.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-20 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is responsive to the Amendment filed on 01/08/2004.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Darcie et al (US Patent No. 5,680,234) in view of Beller (US Patent No. 6,388,741).

Regarding claim 1, referring to Figure 1, Darcie discloses an optical communication device for reflecting detection light to a central station in order to find disorders in a light guide comprising:

a substrate (i.e., an integrated device ONU 26 such as a device formed from an Indium Phosphide substrate, Fig. 1, col. 4, lines 63-67);

at least one light guide (i.e., downstream fibers 24 and 24', Fig. 1) provided on the substrate (i.e., integrated device ONU 26) for guiding signal light;

at least one optoelectronic device chip (i.e., optical transmitter 17, optical receiver 28, Fig. 1) mounted upon the substrate (i.e., integrated device ONU 26); and

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a detection light reflecting filter (i.e., diagnostic blocking filter 40, Fig. 1) disposable on the light guide (i.e., downstream fiber 24) which leads the signal light and reflects detection light of a wavelength different from the signal light such that the central station (i.e., central office 13, Fig. 1) detects disorders in the light guide between the central station and an optical communication device based upon whether detection light reflected by the detection light reflecting filter (i.e., diagnostic blocking filter 40, Fig. 1) is received by the central station (i.e., central office 13, Fig. 1)(see col. 3, lines 45-67, col. 4, lines 1-67, col. 5, lines 1-67 and see from col. 6, line 1 to col. 8, line 30).

Darcie differs from claim 1 in that he does not specific teach the filter is a grating filter. However, Beller teaches a detection light reflecting filter and the filter is an grating filter (see Figs. 1a and 1d, col. 4, lines 3-25 and lines 58-67 and col. 5, lines 1-10). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the filter is a grating filter as taught by Beller in the system of Darcie. One of ordinary skill in the art would have been motivated to do this since Beller suggests in column 4, lines 3-25 and lines 58-67 and col. 5, lines 1-10 that using such a grating filter has advantage of allowing reducing cost and the size of the device and simultaneous reducing the loss of signal and detecting faults in the fibers with high reliability.

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Darcie et al (US Patent No. 5,680,234) in view of Beller (US Patent No. 6,388,741). and further in view of Higashi (US Patent No. 5,937,120).

Regarding claim 2, Darcie as modified by Beller above discloses all the aspects of the claimed invention as set forth in rejection claim 1 above except fails to teach the light guide is a silica optical fiber mounted upon the substrate. However, Higashi in US Patent No. 5,937,120 teaches the light guide (10)(Figs. 1 and 2) is an optical fiber mounted upon the substrate (1)(Fig. 1) (see col. 1, lines 5-8 and lines 38-67, col. 2, lines 1-8, and col. 3, lines 28-58). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the light guide is an optical fiber mounted upon the substrate as taught by Higashi in the system of Darcie as modified by Beller. One of ordinary skill in the art would have been motivated to do this since Higashi suggests in column 2, lines 21-24 that using such a light guide is an optical fiber mounted upon the substrate has advantage of allowing providing an optical device which is able to achieve good optical coupling efficiency and also emit a light with a single wavelength.

5. Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Darcie et al (US Patent No. 5,680,234) and Beller (US Patent No. 6,388,741). in view of Higashi (US Patent No. 5,937,120) and further in view of Pimpinella (US Patent No. 5,257,332).

Regarding claims 17-20, the combination of Minami, Beller and Higashi differs from claims 17-20 in that it does not specifically teach two substrate with V-grooves for holding fiber. However, Pimpinella teaches two substrate with V-grooves for holding fiber (Figs. 1-10, see from col. 2, line 30 to col. 5, line 26 and see abstract section). Therefore, it would have been obvious to one having skill in the art at the time the

invention was made to incorporate the two substrate with V-grooves for holding fiber as taught by Pimpinella in the system of the combination of Darcie, Beller and Higashi. One of ordinary skill in the art would have been motivated to do this because Pimpinella suggests in abstract section and from col. 2, line 30 to col. 5, line 26 that using such the two substrate with V-grooves for holding fiber have advantage of allowing achieving good optical coupling and reducing size.

6. Claims 3, 4, 6 and 10-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Darcie et al (US Patent No. 5,680,234) in view of Beller (US Patent No. 6,388,741) and further in view of Komatsu (US Patent No. 6,192,170).

Regarding claim 3, Darcie as modified by Beller above discloses all the aspects of the claimed invention as set forth in rejection claim 1 above excepts fails to teach the substrate is a silicon substrate and the light guide is a SiO₂ type light waveguide produced upon the silicon substrate. However, Komatsu teaches a substrate (101)(Fig. 1) is a silicon substrate and the light guide (103)(Fig. 1) is a SiO₂ type light waveguide produced upon the silicon substrate (101) (see col. 1, lines 18-58). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the substrate is a silicon substrate and the light guide is a SiO₂ type light waveguide produced upon the silicon substrate as taught by Komatsu in the system of Darcie modified by Beller. One of ordinary skill in the art would have been motivated to do this since Komatsu suggests in column 1, lines 46-59 that using such a substrate is a silicon substrate and the light guide is a SiO₂ type light

waveguide produced upon the silicon substrate have advantage of allowing reducing the parts cost, the manufacturing cost, the size and weight of the device, and reducing the optical coupling loss .

Regarding claim 4, the combination of Darcie, Beller, and Komatsu discloses all the aspects of the claimed invention as set forth in rejection claim 1 above except fails to teach the substrate is a plastic substrate made of a polymer and the light guide is a plastic light waveguide produced upon the plastic substrate. However, it is well known in the art that a substrate includes a plastic substrate made of a polymer or a silicon substrate or both of them and the light guide includes a plastic light waveguide produced upon the plastic substrate or a SiO₂ type light waveguide produced upon the silicon substrate. Moreover, Komatsu clearly teaches that one of them can use such as silicon substrate (col. 1, lines 18-58). Whether to use one of them or both of them would have been within the knowledge of a person having ordinary skill in the art and would have been an obvious engineering design choice. Therefore, it would have been obvious to obtain a substrate is a plastic substrate made of a polymer and the light guide is a plastic light waveguide produced upon the plastic substrate in order to reduce the parts cost, the manufacturing cost, the size and weight of the device and simultaneous to reduce an optical coupling loss.

Regarding claims 6 and 11, Darcie as modified by Beller teaches all the aspects of the claimed invention excepts fails to teach a plurality of independent light waveguides are provided on the substrate. However, Komatsu teaches a plurality of independent light waveguides (103)(Fig. 1) are provided on the substrate (see col. 1,

lines 14-58). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the plurality of independent light waveguides are provided on the substrate as taught by Komatsu in the system of Darcie modified by Beller. One of ordinary skill in the art would have been motivated to do this since Komatsu suggests in column 1, lines 14-59 that using such a plurality of independent light waveguides are provided on the substrate s have advantage of allowing providing an optical device which is able to transmit and receive the signals at the same time.

Regarding claim 10, the combination of Darcie, Beller and Komatsu teaches all the optoelectronic devices are photodiodes for receiving a plurality of independent signals simultaneously (Fig. 1 of Darcie and Fig. 1 of Kamatsu).

Regarding claim 12, the combination of Darcie, Beller and Komatsu teaches wherein m optoelectronic devices are LDs (laser diodes) for transmitting a plurality of independent signals simultaneously and k optoelectronic devices are PDs (photodiodes) for receiving a plurality of independent signals simultaneously (Fig. 1 of Darcie and Fig. 1 of Kamatsu).

Regarding claims 13 and 15, the combination of Darcie, Beller and Kamatsu teach the light waveguide is Y-branched waveguides having a first light waveguide, a second light waveguide and a coupling part selectively connecting the first and the second waveguides, an LD is mounted at an end of the first waveguide for launching transmitting light into the end of the first light waveguide, a PD is mounted at an end of

the second waveguide for sensing receiving light emitted from the end of the second waveguide and producing a photocurrent from the receiving light (Fig. 1 of Darcie)

Regarding claims 14 and 16, the combination of Darcie, Beller and Komatsu above discloses all the aspects of the claimed invention as set forth in rejection claims 13 and 15 above except fails to teach an amplifier is mounted on the substrate for amplifying the photocurrent of the PD. However, it is well known in the art that providing an amplifier to amplify the signal or increase the power level of signal. Therefore, it would have been obvious to obtain an amplifier is mounted on the substrate to amplify the signal or increase the power level of signal to a desired level.

7. Claims 5 and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Darcie et al (US Patent No. 5,680,234) in view of Beller (US Patent No. 6,388,741) and further in view of Kato et al (US Patent No. 5,859,945).

Regarding claims 5 and 8, Darcie as modified by Beller above discloses all the aspects of the claimed invention as set forth in rejection claim 1 above except fails to teach a plurality of independent optical fibers are provided on the substrate. However, Kato in US Patent No. 5,859,945 teaches a plurality of independent optical fibers (2)(Fig. 1) are provided on the substrate (see col. 4, lines 18-46). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the plurality of independent optical fibers are provided on the substrate as taught by Kato in the system of Darcie as modified by Beller. One of ordinary skill in the art would have been motivated to do this since Kato suggests in column 2, lines 4-30

and col. 1, lines 6-11 that using such a plurality of independent optical fibers are provided on the substrate have advantage of allowing providing an optical device which is able to transmit and receive the signals at the same time.

Regarding claim 7, the combination of Darcie, Beller and Kato teaches all the optoelectronic devices are photodiodes for receiving a plurality of independent signals simultaneously (see Fig. 1 of Darcie and Fig. 1 of Kato).

Regarding claim 9, the combination of Darcie, Beller and Kato teaches wherein m optoelectronic devices are LDs (laser diodes) for transmitting a plurality of independent signals simultaneously and k optoelectronic devices are PDs (photodiodes) for receiving a plurality of independent signals simultaneously (see Fig. 1 of Darcie and Fig. 1 of Kato).

Response to Arguments

8. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Phan whose telephone number is (703)306-5840.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached on (703)305-4729. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4700.



Hanh Phan

Patent Examiner

04/02/2004